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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/814,482

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EXAMINER

GOODWIN, DAVID J

ART UNIT

PAPER NUMBER

2818

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

12/22/2006

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/814,482

Applicant(s)

FURUKAWA ET AL.

Examiner

David Goodwin

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 15 depends on canceled claim 16. The limits of the claim are therefore indeterminate.
4. Claim 15 recites the limitation "said first and second anchors" "said island and "said strained region. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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2.

3. Claims 1-11 and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Wasshuber (US2003/0111699).

4. Wasshuber teaches a semiconductor device. Said device comprises an island (524) of semiconductor material having a plurality of sidewalls and a strained region (paragraph 0031-0032) (fig 22). A handle wafer (514) and an insulating layer (512) disposed between said island (524) and said handle wafer (514). Said insulating layer (512) containing a thick region underlying the strained semiconductor island (524) and said insulating layer (512) electrically isolating said island (524) of said semiconductor material from said handle wafer (514). The underlying thickness of insulator exerts a tensile stress on the strained region (524) (paragraph 0042-0043).

5. Regarding claim 2.

6. Said insulating layer (512) comprises a buried oxide layer and said island is silicon (paragraph 0020-0021).

7. Regarding claim 3.

8. Wasshuber teaches a source (522a) and drain (522b) defined in the island (524), and a channel defined in the island between said source and said drain (fig 22) (paragraph 0034-0036). Said channel is disposed at least partially in said strained region of said island (fig 22) (paragraph 0042-0043).

9. Regarding claim 4.

10. Wasshuber teaches that the gate electrode (540) is isolated from said portion of the island (524) defining said channel (fig 22) (paragraph 0042-0043).

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11. Regarding claim 5.
12. Wasshuber teaches that the insulating material (12b) divides the gate electrode (32) (fig 1) (paragraph 0020-0022).
13. Regarding claim 6.
14. Wasshuber teaches that the gate electrode overlies the channel (fig 22).
15. Regarding claim 7.
16. Wasshuber teaches that that the structure comprises a semiconductor device (fig 22) (paragraph 000042-0043).
17. Regarding claim 8.
18. Wasshuber teaches that the island (524) comprises silicon and the thickness of underlying insulator (512) comprises silicon dioxide (paragraph 0020-0021).
19. Regarding claim 9.
20. Wasshuber teaches that the thickness of underlying insulator comprises silicon dioxide (paragraph 0020-0021).
21. Regarding claim 10.
22. Wasshuber teaches that the wafer (514) comprises silicon and the thickness of underlying insulator (512) comprises silicon dioxide (paragraph 0020-0021).
23. Regarding claim 11.
24. Strained silicon enhances carrier mobility (0003).
25. Regarding claim 13.

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26. The thickened region of said insulating layer (512) has a thickness greater than the surrounding insulating layer flanking said region (fig 22).

27. Regarding claim 14.

28. First and second anchors flanking the strained region prevent relaxation of the strain region (fig 22).

29. Regarding claim 15.

30. First and second anchors flanking and adjacent to the strained region prevent relaxation of the strain region (fig 22).

31.

32. Claims 1-4, 6-12, 14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Yeo (US 2004/0150042).

33. Regarding claim 1

34. Yeo teaches a semiconductor device. Said device comprises an island (84) of semiconductor material having a plurality of sidewalls and a strained region (paragraph 0031-0032) (fig 35). A handle wafer (52) and an insulating layer (54) disposed between said island (84) and said handle wafer (52). Said insulating layer (54) containing a thick region underlying the strained semiconductor island (84) and said insulating layer electrically isolating said island (84) of said semiconductor material from said handle wafer (52). The underlying thickness of insulator exerts a tensile stress on the strained region (84) (paragraph 0031).

35. Regarding claim 2.

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36. Said insulating layer (54) comprises a buried oxide layer and said island is silicon (paragraph 0031).

37. Regarding claim 3.

38. Yeo teaches a source defined in the island, a drain defined in the island, and a channel defined in the island between said source and said drain (fig 5) (paragraph 0034-0036). Said channel is disposed at least partially in said strained region of said island (fig 5).

39. Regarding claim 4.

40. Yeo teaches that the gate electrode is isolated from said portion of the island (84) defining said channel (fig 5) (paragraph 0036).

41. Regarding claim 6.

42. Yeo teaches that the gate electrode overlies the channel (fig 5).

43. Regarding claim 7.

44. Yeo teaches that the structure comprises a semiconductor device (fig 5) (paragraph 0036).

45. Regarding claim 8.

46. Yeo teaches that the island comprises silicon and the thickness of underlying insulator comprises silicon dioxide (fig 0031).

47. Regarding claim 9.

48. Yeo teaches that the thickness of underlying insulator comprises silicon dioxide (fig 0031).

49. Regarding claim 10.

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- 50. Yeo teaches that the wafer comprises silicon and the thickness of underlying insulator comprises silicon dioxide (fig 0031).
- 51. Regarding claim 11.
- 52. Strained silicon enhances carrier mobility (0002).
- 53. Regarding claim 12.
- 54. The thickness of oxide material is more than 5 to 10 nanometers.
- 55. Regarding claim 14.
- 56. First and second anchors flanking the strained region prevent relaxation of the strain region (fig 5).
- 57. Regarding claim 15.
- 58. First and second anchors flanking and adjacent to the strained region prevent relaxation of the strain region (fig 5).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Goodwin whose telephone number is (571)272-8451. The examiner can normally be reached on Monday through Friday, 9:00am through 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571)272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJG

Andy Hynes
Andy Hynes
Primary Examiner